REMARKS

Claims 1-16 are pending. Claims 1-16 are rejected.

Claims 1-4, 6-10, and 12-14 are rejected under 35 U.S.C. §103 (a) as being unpatentable over Hansen et al. (6,340,411) in view of Cook (5,552,740) and further in view of Neogi (US 2003/0208859).

Claims 1-5, 14-15 are rejected under 35 U.S.C. §103 (a) as being unpatentable over Hansen et al. (6,340,411) in view of Cook et al (5,552,740) and Neogi et al. (US 2003/0208859) as applied to Claim 1 and further in view of Smith et al. (US 2002/0090511).

Claims 11 is rejected under 35 U.S.C. §103 (a) as being unpatentable over Hansen et al. (6,340,411) in view of Cook et al (5,552,740) and Neogi et al. (US 2003/0208859) as applied to Claim 1 and further in view of Arifoglu et al et al. (5,103,522).

Claims 15 and 16 are rejected under 35 U.S.C. §103 (a) as being unpatentable over Hansen et al. (6,340,411) in view of Cook et al (5,552,740) and Neogi et al. (US 2003/0208859) as applied to Claim 1 and further in view of Ko et al (US 2003/0211248).

Claims 1-8 and 12-13 are provisionally rejected under the judicially created doctrine of obvious-type double patenting as being unpatentable over claims 1, 5-8, 10-12 and 16-17 of copending Application No. 10/748930 in view of Neogi et al. (US 2003/0208859) and further in view of Cook et al. (5,562,740).

The Rejection of Claims 1-4, 6-10 and 12-14 Under 35 U.S.C. §103 (a)

Claims 1-4, 6-10, and 12-14 are rejected under 35 U.S.C. §103 (a) as being unpatentable over Hansen et al. (6,340,411) in view of Cook (5,552,740) and further in view of Neogi (US 2003/0208859).

As a whole, the Hansen reference teaches a method of densifying fibers using polymeric and non-polymeric densifying agents. The densifying agents in Hansen are binders. Hansen states that fibers with high bulk from intrafiber covalent crosslinks are prepared by individualizing the fibers and curing them at elevated temperatures (above

150°C). The reference states that initial application of the binder on such high bulk fibers preferably occurs *after* the curing step, particularly if the binder is functioning as a crosslinking agent. Hansen states that the specific binders that can crosslink are polyols, polyaldehydes, polycarboxylic acids and polyamines, column 34, line 4-line 7, but if these binders are present the binder will be consumed during curing to form covalent bonds. When this occurs the binder is no longer available for hydrogen bonding or coordinate covalent bonding and binding to particles is ineffective. Thus the reference teaches away from forming covalent bonds. Contrary to the Examiner's contention, Applicants submit that the reference does not teach the *combination of a polyol and a polycarboxylic acid* during the crosslinking reaction, rather, the reference teaches that when these binders are present *alone* during the curing step, the binder will be consumed to form covalently crosslinked bonds. As a consequence, the binder is no longer available for hydrogen binding and the binding of the particles to the fibers is ineffective, column 33, line 65 to column 34, line 13. Thus, because of crosslinking during the curing stage, the reference teaches away from using binders which can crosslink during the curing stage. Furthermore, Hansen states a particular disadvantage of forming covalent ester intrafiber crosslinks is that the resulting fiber product resists densification, column 3, line 13-15 and the covalent bonds within the fibers produce a pulp sheet that is more difficult to compress to conventional pulp sheet densities than an untreated sheet, column 3, line 5-7. Hence the reference teaches away from the claimed invention when the binders are used alone in the curing stage and is also is silent as to the use of a combination of the polyol and the polycarboxylic acid during the crosslinking reaction with cellulose. Applicants submit that Hansen teaches against crosslinking of polyols together with polycarboxylic acids and thus fails to recognize the benefit of crosslinking cellulose with a polycarboxylic acid in the presence of a polyol as shown in the Applicant's application. In Table 1 of the application, when cellulose is crosslinked with citric acid in the presence of, for example, sorbitol, the Whiteness Index ,$WI_{(CDM-L)}$, increases from 73.77 for the control to 81.1 with a 2 weight percent sorbitol on fiber using CF416 pulp and from 73.77 to 83.27 percent with a 6 weight percent sorbitol on fiber using the same pulp. The Examiner also states that Hansen et al. does not disclose bleached fibers or that bleached fibers have a higher whiteness than unbleached fibers.

The Examiner states that Cook et al. disclose individualized polycarboxylic acid crosslinked fibers with a brightness of 86 after bleaching in an aqueous solution of sodium hydroxide and hydrogen peroxide. Cook et al indicates the need for high fiber brightness.

Cook teaches odor removal and brightness improvement by contacting citric acid crosslinked fibers with an alkaline solution such as sodium hydroxide and an oxidizing solution such as hydrogen peroxide to remove odor and improve brightness. Cook does not teach improving the Whiteness Index of crosslinked fibers when a polyol and crosslinking agent are used together in the crosslinking reaction prior to bleaching.

The Examiner relies on the Neogi reference as teaching that bleaching indirectly elevates whiteness and that consumer preference is toward brighter and whiter product thus giving motivation to increase brightness and whiteness. Applicants respectfully submit that the rejection based on the Neogi reference be withdrawn for the following reasons.

The Neogi reference has a publication date of November 13, 2003 and is a § 102(a) reference with respect to the present application. Because the present invention was reduced to practice before the publication of the Neogi reference, withdrawal of the rejection based on the Neogi reference is respectfully requested.

37 C.F.R. § 1.131: Declaration of Prior Invention. According to 37 C.F.R. § 1.131, if the applicant establishes reduction to practice of the invention claimed in his application prior to the effective date of the reference, then the Patent Office should withdraw the rejection based on that reference. 37 C.F.R. § 1.131(a) (1), states, in pertinent part:

> [w]hen any claim of an application is rejected, the inventor of the subject matter of the rejected claim ... may submit an appropriate oath or declaration to establish invention of the subject matter of the rejected claim prior to the effective date of the reference ... on which the rejection is based.

Therefore, pursuant to 37 C.F.R. § 1.131, an applicant may overcome a 35 U.S.C. § 102(a) rejection by presenting a showing of facts that establish that applicant reduced to practice the claimed invention in the U.S. before the effective date of the cited reference.

Evidence of Prior Invention. Enclosed herewith is the declaration of Kathy A. Welch evidencing invention of the presently claimed subject matter prior to November 13, 2003, the publication date of the Neogi reference.

As set forth in Ms. Welch's declaration, bleached crosslinked cellulose fibers were prepared by crosslinking cellulosic fibers with a crosslinking agent e.g. citric acid, in the presence of a polyol and subsequently bleached with a bleaching agent (i.e., hydrogen peroxide or a combination of hydrogen peroxide and sodium hydroxide), see Welch declaration paragraph 4. The declaration and supporting documentation (Exhibits A-D) evidence the preparation of the crosslinked fibers prepared by crosslinking cellulose in the presence of a polyol and then bleaching. The resulting fibers have the properties described in Table 4 of the present application. All of the bleached crosslinked fibers described, prepared by crosslinking cellulose fibers with citric acid in the presence of a polyol and then bleached were prepared prior to November 13, 2003, see Welch declaration paragraph 5.

The Welch declaration and supporting documentation evidence that the claimed invention was reduced to practice prior to the publication of the Neogi reference. Because the Neogi reference has an effective date after the date of reduction to practice of the presently claimed invention, applicants have established reduction to practice of the claimed invention prior to the effective date of the Neogi reference.

Because applicants have established that the claimed invention was reduced to practice prior to the effective date of the Neogi reference, withdrawal of the rejections based on the reference is respectfully requested.

Applicants submit that without the Neogi reference, there is no motivation to combine. Hansen teaches away from forming covalent crosslink ester intrafiber crosslinks and does not teach the combination of a polyol and a crosslinking agent in the crosslinking reaction with cellulose and consequently does not recognize the benefit of crosslinking cellulose with a crosslinker in the presence of a polyol. The Cook reference solves the problem of odor removal and improves the brightness of citric acid crosslinked fibers by treating citric acid crosslinked fibers with an alkaline solution of hydrogen peroxide. The reference does not disclose the use of a polyol in the presence of a crosslinking agent during the crosslinking reaction with cellulose nor does it disclose the

Whiteness Index of the instant invention. Neogi is not available as a reference since the instant invention antedates the invention. Accordingly, the claimed invention is nonobvious. Withdrawal of the rejection is respectfully requested and Applicants respectfully request the Final Action be withdrawn.

The Rejection of Claims 1-5 and 14-15 Under 35 U.S.C. §103 (a)

Claims 1-5, 14-15 are rejected under 35 U.S.C. §103 (a) as being unpatentable over Hansen et al. (6,340,411) in view of Cook et al (5,552,740) and Neogi et al. (US 2003/0208859) as applied to Claim 1 and further in view of Smith et al. (US 2002/0090511).

Claims 2-4, 14 and 15 are dependent on Claim 1

As stated above, the Hansen reference does not teach the use of a combination of a polycarboxylic acid and a polyol in the crosslinking reaction with cellulose rather, it teaches that binders such as polyols, polyaldehydes, polycarboxylic acids and polyamines can be used *alone* as crosslinking agents. Thus it teaches away from the claimed invention. Furthermore, Hansen also teaches away from using binders such as polyols, polyacrylic acid, polyaldehydes and polyamines during the curing step since it results in loss of effectiveness of the binder. Because Hansen teaches away from the use of binders during the crosslinking reaction, he fails to recognize the benefit of using a crosslinking agent in the presence of a polyol to increase the Whiteness Index, $WI_{(CDM-L)}$, The Neogi references is not available as prior art that is citable against the present application. Cook only discloses removal of odor and increase fiber brightness and does not teach the use of polyols during the crosslinking reaction to improve the Whiteness Index of bleached crosslinked fibers.

The Smith et al. reference merely discloses crosslinked fibers which have been prepared by crosslinking fibers with at least one saturated dicarboxylic acid, aromatic dicarboxylic acid, cycloalkyl dicarboxylic acid, bifunctional monocarboxylic acid, or amine carboxylic acid. crosslinked fibers. Furthermore Smith et al. do not teach or suggest the use of polyols in combination with a crosslinking agent, bleaching the resulting crosslinked fibers and the Whiteness of the crosslinked fibers of the instant invention.

There is no motivation to combine the references to arrive at the claimed invention. Hansen teaches away from using a binder which crosslinks during the curing step with a resultant loss of effectiveness of the binder. Hansen also teaches away from the combination of a polyol with a crossslinking agent in the reaction with cellulose and fails to recognize the benefit of using a polyol and crosslinking agent together in the crosslinking reaction. Furthermore, the Neogi references is not available as a prior art reference. The Cook reference does not teach or suggest the use of polyols during the crosslinking reaction to improve the Whiteneess Index of bleached crosslinked fibers and Smith et al. does nothing more than to cite crosslinking agents for cellulose. The claimed invention, therefore, is nonobvious and withdrawal of the rejection is respectfully requested.

The Rejection of Claim 11 Under 35 U.S.C. §103 (a)

Claim 11 is rejected under 35 U.S.C. §103 (a) as being unpatentable over Hansen et al. (6,340,411) in view of Cook et al (5,552,740) and Neogi et al. (US 2003/0208859) as applied to Claim 1 and further in view of Arifoglu et al et al. (5,103,522).

Claim 11 is dependent from Claim 1.

As stated above, there is no motivation to combine the references to arrive at the claimed invention. Hansen teaches away from using a binder which crosslinks during the curing step with a resultant loss of effectiveness of the binder. The Hansen reference also teaches away from the combination of a polyol with a crosslinking agent to crosslink cellulose. Hansen only states that polyols, polyaldehydes, polycarboxylic acids and polyamides can crosslink and is silent to the use of a polyol and a polycarboxylic acid together in crosslinking cellulose. Since Hansen teaches away from crosslinking cellulose with polycarboxylic acid in the presence of polyols, Hansen fails to recognize the whiteness benefit realized by this combination. The Neogi reference is not available as prior art and the Cook reference does not teach or suggest the use of polyols during the crosslinking reaction with a polycarboxylic acid to improve the Whiteneess Index of bleached crosslinked fibers.

Arifoglu adds nothing in terms of teaching, suggesting or motivating one skilled in the art to combine the references. Arifoglu teaches two step sequential oxidative and reductive bleaching of fibers including animal hair fibers, plant fibers, synthetic fibers, and blends of two or more of the aforementioned, notably, fibers consisting essentially of wool, fibers consisting of cotton, and blends of wool with either materials. The bleaching processes of Arifoglu are limited to, among others, plant fibers consisting of cotton, column 2, line 53 - line 57. This limits, therefore, its application to fibers from plants with non woody stems and does not include all other cellulose fibers such as those derived from wood pulp as in the instant application and the skilled artisan would not be motivated to pursue bleaching crosslinked fibers which Arifoglu limits to cotton fibers. The Hansen reference teaches away from the use of a binder during the curing step with a resultant loss of effectiveness of the binder and does not teach the combination of a polyol with a crosslinking agent to crosslink cellulose. The Neogi reference is not available as a prior art reference and the Cook reference only teaches bleaching of fibers. Cook does not teach bleaching crosslinked fibers in which the cellulose fibers have been crosslinked with a crosslinking agent in the presence of a polyol. Since there is no suggestion or motivation to combine the references, the claim is nonobvoious. Withdrawal of the rejection is respectfully requested.

The Rejection of Claim 15 and 16 Under 35 U.S.C. §103 (a)

Claims 15 and 16 are rejected under 35 U.S.C. §103 (a) as being unpatentable over Hansen et al. (6,340,411) in view of Cook et al (5,552,740) and Neogi et al. (US 2003/0208859) as applied to Claim 1 and further in view of Ko et al (US 2003/0211248).

Claims 15 and 16 are dependent from Claim1.

As discussed above, the Hansen reference teaches away from the use of a binder that can crosslink such as a polyol, polyaldehyde, polycarboxylic or polyamine since it destroys the effectiveness of the binder during the curing stage. Furthermore, Hansen states a disadvantage of forming covalent ester intrafiber crosslinks is that the resulting fiber product resists densification and results in a pulp sheet that is more

difficult to compress to conventional sheet densities than untreated sheet. Hansen also teaches away from the use of the combination of a polyol and polycarboxylic acid during the crosslinking stage since he is silent as to the combined use of these during the crosslinking reaction. The Neogi reference is not available as prior art. The Cook reference fails to suggest or provide any motivation to further improve the whiteness of bleached crosslinked fibers. Ko teaches making an absorbent structure such as a fibrous web or a foam scrim and then forming a superabsorbent polymer in situ or in the substrate by addition of one or more superabsorbent polymer precursor compositions to the web and performing the polymerization reaction(s) completely on and / or in the fibrous web. The superabsorbent polymer precursor compositions are applied to the substrate and reacted at predetermined controlled locations having controlled size and spacing between them.

There is no motivation in the Hansen reference to arrive at the claimed invention since it teaches away from the presence of using a polyol during the curing step with a resultant loss of effectiveness of the binder, an undesireable result, and the Neogi reference is not available as prior art. The Cook reference does not teach or suggest the use of polyols during the crosslinking reaction to improve the Whiteneess Index of bleached crosslinked fibers. Furthermore, there is no suggestion, teaching or motivation in the Cook reference to combine with the teachings of Ko. Even if the references were combined, the instant invention would not be realized because Hansen does not teach crosslinked fibers made with a polyol and a polycarboxylic acid during crosslinking, Cook does not teach the use of a polyol and does nothing to improve the whitness above the bleached fiber and Neogi is not available as a reference. Combining with Ko would not be sufficient to arrive at the claimed invention. Applicants submit therefore the claims are nonobvious and respectfully request withdrawal.

The Provisional Obviousness-Type Double Patenting Rejection

Claims 1-8 and 12-13 have been provisionally rejected under the judicially created doctrine of obviousness double patenting as being unpatentable over claims 1, 5-

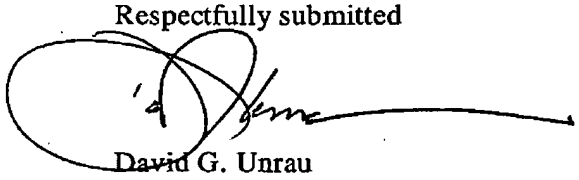
8, 10-12 and 16-17 of copending Application No. 10/748930 in view of Neogi et al. (US 2003/0208859) and further in view of Cook et al. US 5,562,740).

Applicants note the provisional double patenting rejection and will file a terminal disclaimer on the Examiner's indication of allowable subject matter.

CONCLUSION

Based on the foregoing, Applicants submit that the application is in condition for allowance and request that it proceed accordingly. If the Examiner has any further questions or comments the Examiner is invited to contact the Applicants' agent.

Respectfully submitted



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